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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,189	03/26/2004	Bruce A. Hecht	A0312.70490US01	2956
7590 07/29/2005			EXAMINER	
William R. McClellan			TAN, VIBOL	
Wolf, Greenfield & Sacks, P.C.			ART UNIT	
600 Atlantic Avenue			PAPER NUMBER	
Boston, MA 02210			2819	

DATE MAILED: 07/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/811,189

Applicant(s)

HECHT ET AL.

Examiner

Vibol Tan

Art Unit

2819

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4,6,8,11-13,15,16,20,26 and 28 is/are rejected.
7) ☒ Claim(s) 5,7,9,10,14,17-19,21-25 and 27 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/05/04.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the digital input circuit and the cable loss compensation circuit must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

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2. Claims 2-12, 14-15 and 17-27 are objected to because of the following informalities: change "A..." to "The..." Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 6, 8, 11-13, 15, 16, 26 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Persons (U. S. PAT. 5,521,493).

In claim 1, Persons teaches all claimed features in Fig. 4, a method for operating a driver circuit, comprising: operating the driver circuit (401) at full power in a dynamic mode (when 401 transmitting test signals); and operating the driver circuit at reduced power in a termination mode (when DUT 101 transmitting the test signals to 403, circuit 401 serves to monitor output signals and acts as a terminator).

In claim 2, Persons further teaches the method as defined in claim 1, wherein operating the driver circuit at reduced power comprises reducing (IOL and IOH are programmed to 50 mA in the termination mode versus 55-65 mA in the transmitting mode) or turning off at least one current in the driver circuit in the termination mode.

In claims 3 and 4, Persons further teaches the method as defined in claim 1, wherein operating the driver circuit at reduced power comprises reducing a slew current for an output stage of the driver circuit (inherent, since reducing power would reduce slew); and wherein operating the driver circuit at reduced power comprises reducing an

idle current for an output stage of the driver circuit (inherent, since reducing power would reduce idle current).

In claim 6, Persons further teaches the method as defined in claim 1, wherein operating the driver circuit at reduced power comprises reducing bias current (IOL and IOH to 50 mA) to a reverse buffer (403) of the driver circuit.

In claim 8, Persons further teaches the method as defined in claim 1, wherein operating the driver circuit (401) at reduced power comprises reducing bias current to input buffers (not shown, would be buffers supplying VIH and VIL) that supply programmable levels (VIH, VIL) to an output stage of the driver circuit.

In claim 11, Persons further teaches the method as defined in claim 1, wherein operating the driver circuit at full power comprises selectably operating in a high state (logic 1), a low state or an inhibit state in the dynamic mode.

In claim 12, Persons further teaches the method as defined in claim 1, wherein operating the driver circuit at reduced power comprises selectably operating in a high state (logic 1), a low state or an inhibit state in the termination mode.

Claims 13 and 15 correspond to detailed circuitry already discussed similarly with regard to claims 1 and 2.

In claim 16, Persons teaches all claimed features in Fig. 4, a driver circuit for use in automatic test equipment, comprising: an output circuit (401) operable in a dynamic mode (transmitting) and in a termination mode (monitor); and a mode control circuit (420) for supplying a first current (55-65 mA) to the output circuit in the dynamic mode

and for supplying a second current (50 mA) to the output circuit in the termination mode in response to a mode select signal (LOAD ENABLE).

In claim 26, Persons further teaches the driver circuit as defined in claim 16, further comprising one or more input buffers (not shown, but would be coupled to provide VIH and VIL) coupled to the output circuit (401), wherein the mode control circuit (420) is configured to control a bias current (I1, I2) supplied to the one or more input buffers in response to the mode select signal (LOAD ENABLE).

In claim 28, Persons teaches all claimed features in Fig. 4, a method for operating a driver circuit in automatic test equipment, comprising: operating an output circuit (401) of the driver circuit in a dynamic mode (transmitting) and in a termination mode (monitor) in response to a mode select signal (LOAD ENABLE); supplying a first current (55to 65 mA) to the output circuit in the dynamic mode; and supplying a second current (50 mA) to the output circuit in the termination mode, wherein the first current is larger than the second current.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Persons in view of Lau et al. (U. S. PAT. 5,146,159).

Persons teaches all claimed features the driver circuit as defined in claim 16, with the exception of teaching wherein the output circuit comprises a class AB output circuit. However, Lau et al. teaches in claim 10, the pin driver in which the predrive stage is a forward biased for class AB operation for maintaining a low quiescent current of the test signal.


Therefore; it would have been obvious to one ordinary skill in the art at the time of the invention was made to implement a class AB output circuit, as taught be Lau et al. into the driver circuit of Persons in order to maintain a low quiescent current of the test signal.

7. Claims 5, 7, 9, 10, 14, 17-19, 21-25 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vibol Tan whose telephone number is (571) 272-1811. The examiner can normally be reached on Monday-Friday (7:00 AM-4:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



VIBOL TAN
PRIMARY EXAMINER